



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/902,340	07/10/2001	Lih-Hsin Chou	CU-2592 RJS	8900
26530	7590	08/11/2004	EXAMINER	
LADAS & PARRY			ANGEBRANDT, MARTIN J	
224 SOUTH MICHIGAN AVENUE, SUITE 1200			ART UNIT	
CHICAGO, IL 60604			PAPER NUMBER	

1756

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/902,340	Applicant(s) CHOU ET AL.	
	Examiner Martin J Angebranndt	Art Unit 1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,6,7 and 9 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,6,7 and 9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1756

1. The response provided by the applicant has been read and given careful consideration.

The examiner's response to the arguments of the applicant is presented after the first rejection to which they are directed. Rejections of the previous office action, not repeated below are withdrawn due to the amendments and arguments of the applicant. The after final amendment of July 02, 2004 was not entered as it was superceded by the amendment of July 06, 2004. When citing art for the record, the applicant should submit a proper PTO 1449.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2b Claims 1,6,7 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, at line 5, please replace "said hydrogenated amorphous material" with - - said hydrogenated amorphous carbon- -.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1,6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Takakubo et al. JP 01-169749, in view of Taniguchi JP 05-004986.

Takakubo et al. JP 01-169749 teaches amorphous carbon hydrogen films as the recording layer using plasma CVD under the conditions of 30 mTorr and 100 W RF power. The thickness may be 300-900 nm (page 2/upper right column) and may be formed on glass of inexpensive

Art Unit: 1756

organic resin substrates ((page 2, lower left column). The heating of the film to 600 or 800 degrees which are each temperatures greater than 300 degrees is discussed in the body the text and in the abstract. The change in the state is observed by Raman spectroscopy. The recording layer is very hard (abstract)

Taniguchi JP 05-004986 (machine translation attached) teaches the formation of a hard amorphous carbon film containing 15-35% hydrogen. The irradiation of this film is disclosed as causing the release of hydrogen gas. Example 2 teaches a mixture of methane and hydrogen at 15 mTorr with a negative bias of 300 V on the substrate and a heating of 200 degrees to form a film having a hydrogen content of 20%. [0025-0026] After irradiation with 365 nm light, the hydrogen content is 8%. [0027].

It would have been obvious to one skilled in the art to form amorphous hydrogenated carbon layer of Taniguchi JP 05-004986, in place of that used by Takakubo et al. JP 01-169749 as it clearly undergoes changes in composition in response to light and loses hydrogen and this change in the hybridization of the carbon would be detectable using the Raman spectroscopic method of Takakubo et al. JP 01-169749 and to form the recording layer within the 300-600 nm thickness range on an inexpensive organic resin substrate based upon the disclosed to do so. The high loss of hydrogen when heated by light evidenced by the amorphous hydrogenated carbon layers of Taniguchi JP 05-004986 make it very sensitive to light and therefore desirable as a recording layer.

The applicant asserts that the layer of Takakubo et al. JP 01-169749 is outside the product by process language of the claims. The examiner agrees that the microstructure would be different based upon the documents in the record. The citation of Taniguchi JP 05-004986

solves this defect in the rejection. The applicant asserts that the absorption in the 300-900 range changes. This is less clear and there is no evidence to support this assertion which might have implications on the sensitivity of the recording layer. The examiner notes that Taniguchi JP 05-004986 teaches the absorption edge of 0.4 to 2.8 eV for carbon hydride films [0012]. The high loss of hydrogen in response to irradiation at 365 nm is held to confer a high photosensitivity to the layer of example 2 of Taniguchi JP 05-004986 the changes in which are Raman detectable.

5. Claims 1,6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takakubo et al. JP 01-169749, in view of Taniguchi JP 05-004986, further in view of Inaba et al. JP 08-007219.

Inaba et al. JP 08-007219 teaches the formation of amorphous hydrogenated carbon films, where the hydrogen content is measured by Raman spectroscopy or IR [0007,0013]. The SP3 structure is attributed to hydrogen [0013]. Examples 1 teaches PECVD at a pressure of 50 mTorr and with a bias of 400 v to the substrate. The relationship between the hydrogen content and the bias voltage is disclosed [0017].

In addition to the basis provided above, the examiner cites Inaba et al. JP 08-007219 to support the position that the hydrogen loss of the materials of Takakubo et al. JP 01-169749 would be detectable using the Raman method of Takakubo et al. JP 01-169749 due to the difference in the hybridization of the carbon (SP2 vs SP3), which is detected by the Raman analysis as evidenced by Takakubo et al. JP 01-169749.

6. Claims 1,6,7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takakubo et al. JP 01-169749, in view of Taniguchi JP 05-004986, Takakubo et al. JP 01-169749 and Ohkawa et al. '635

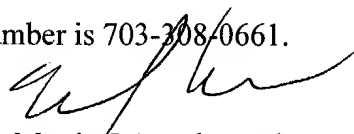
In addition to the basis provided above, the examiner holds that it would have been obvious to use old and well known polymeric substrates, such as the polycarbonate, polymethyl methacrylate (an acrylic resin), polyolefin, or epoxy resins disclosed by Ohkawa et al. '635 as the plastic substrate materials in the optical recording media of Takakubo et al. JP 01-169749 as modified by Taniguchi JP 05-004986 and Takakubo et al. JP 01-169749.

The rejection stands for the reasons provided above without further comment as no further arguments were directed at this rejection.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9309 for regular communications and 703-872-9309 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-208-0661.



Martin J Angebranndt
Primary Examiner
Art Unit 1756

August 5, 2004